THE DROUGHT OF 1930 IN OHIO

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In 1930, Ohio experienced one of the most severe droughts in its history. An attempt is made in this report to assemble some of the most important available data relating to the drought and its effect upon Ohio agriculture during 1930. Part I summarizes the precipitation data.

Part I

The total amount of precipitation for the state as a whole in 1930 was 27.00 inches compared with the average from 1883-1929 of 38.25 inches; a deficit of 11.25 inches or a precipitation 71 per cent of normal. It was the driest of any year for which records are available, or since 1854, being approached only by three years 1856, 1894, and 1895, with precipitation of 28.02; 29.75 and 28.46 inches respectively. As may be seen from Table 1 the shortage in precipitation began in February and continued to increase in severity until July when the rainfall for the month was 1.53 inches compared with a normal of 3.86 inches. In August there was some relief, followed by a more nearly normal rainfall in September, the latter month showing a deficiency of only .21 inches. October, November, and December, showed deficits of 1.32, 1.26 and 1.60 inches respectively, below normal. In no month following January did the precipitation reach normal.

The total precipitation for the 1930 growing season from April to August inclusive was 10.13 inches compared with a normal of 17.96 inches; a deficit of 7.83 inches, or a precipitation 56 per cent of normal. The effect of the drought on crop yields was doubtless made more severe by the high temperature from April to August inclusive. The temperature during each of these five months was above normal, ranging from 0.4 degrees in August to 2.7 degrees in May with an average of 1.7 degrees above normal for the period. Table 2 shows the average monthly temperature for 1930 compared with normal.

Table 1. Monthly and Annual Precipitation for Ohio

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Av. 1883-1929	3.04	2.69	3.39	3.16	3.76	3.85	3.86	3.33	2.93	2.64	2.81	2.79	38.25
1930	4.69	2.63	2.77	2.11	1.80	2.34	1.53	2.35	2.72	1.32	1.55	1.19	27.00
Departure from average	+1.65	-0.06	-0.62	-1.05	-1.96	-1.51	-2.33	-0.98	-0.21	-1.32	-1.26	-1.60	-11.25

Taken from Ohio Agricultural Experiment Station Bulletin No. 445 and adding to that the data for 1929.

Table 2. Monthly and Annual Temperature for Ohio

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Normal	27.9	29.4	39.3	49.7	60.1	69.1	73.4	71.6	65.6	53.9	41.6	31.2	51.1
1930	27.8	38.7	38.3	52.1	62.8	70.0	75.6	72.0	67.7	51.1	42.6	30.9	52.5
Departure from normal	-0.1	+9.3	-1.0	+2.4	+2.7	+0.9	+2.2	+0.4	+2.1	-2.8	+1.0	-0.3	+1.4

Taken from Climatological Data Bulletin of Weather Bureau, U. S. D. A.

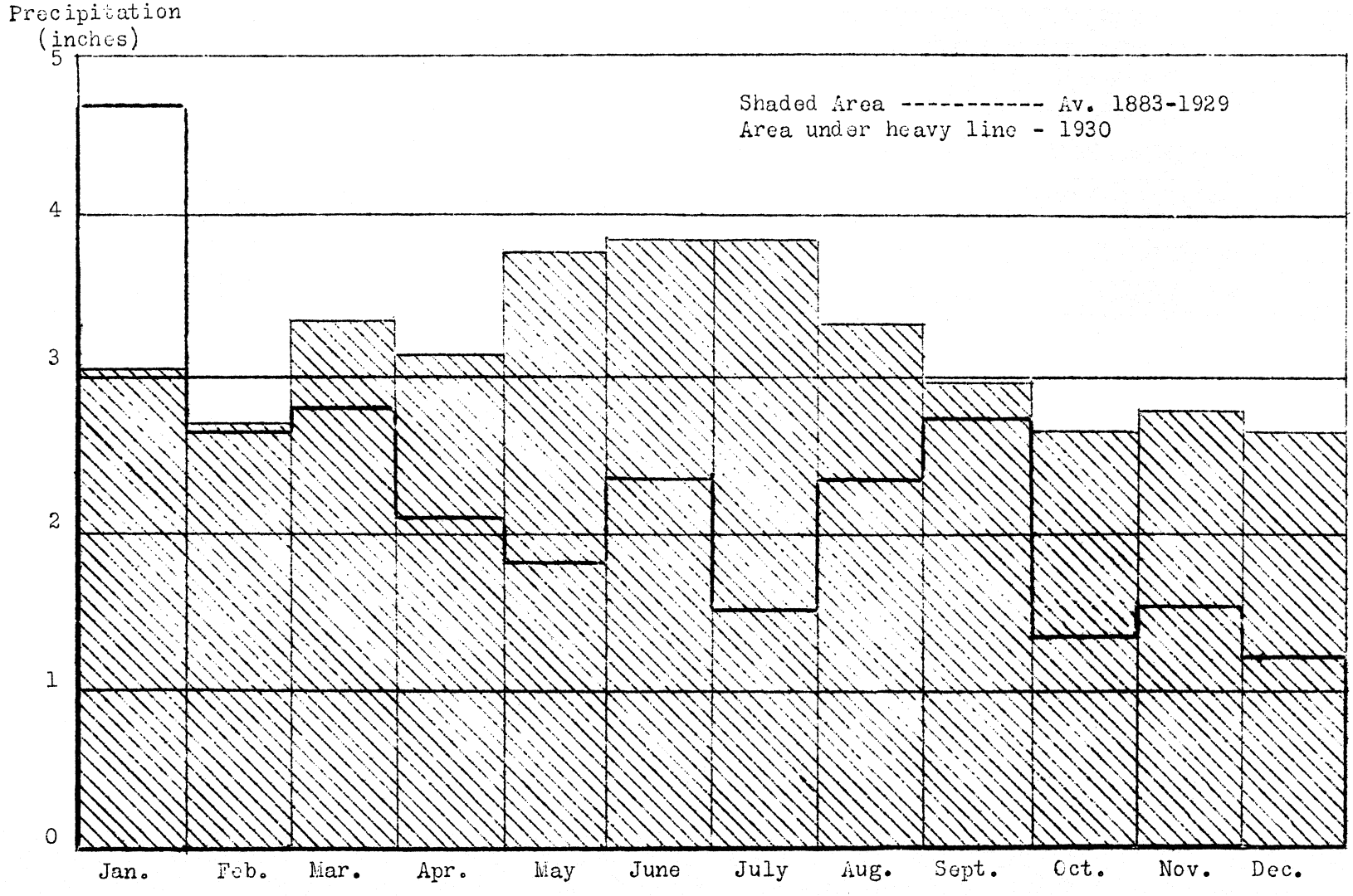


Chart I. Monthly Precipitation in Ohio.

Charts II and III, reproduced from "Climatological data - Ohio section," show graphically the normal precipitation and the precipitation for 1930 by regions. Charts IV, V, and VI show the actual precipitation as reported by stations in the various counties.

The normal precipitation for Ohio is greatest in the southeastern portion of the state from Lawrence to Jefferson counties with an average of more than 42 inches. There is a gradual decrease in amount as we pass from this area of greatest precipitation across the state in a north westerly direction to a region along Lake Erie including Lucas, Ottawa, and Erie counties, where the normal precipitation is 33 inches or less, or a difference of at least 9 inches over a distance of 250 miles.

The precipitation chart for 1930 (Chart III) appears quite different from the normal. The greatest precipitation occurred in a narrow region extending from Darke to Crawford counties. The driest area with a precipitation of 25 inches or less fell south of an almost straight line extending from Butler to Columbiana counties. This region which had less than 25 inches of precipitation in 1930 normally has more than 39 inches or a deficit for the year 1930 of at least 14 inches. Wilmington in Clinton county and Marietta in Washington county received during the year less than one-half the normal rainfall.

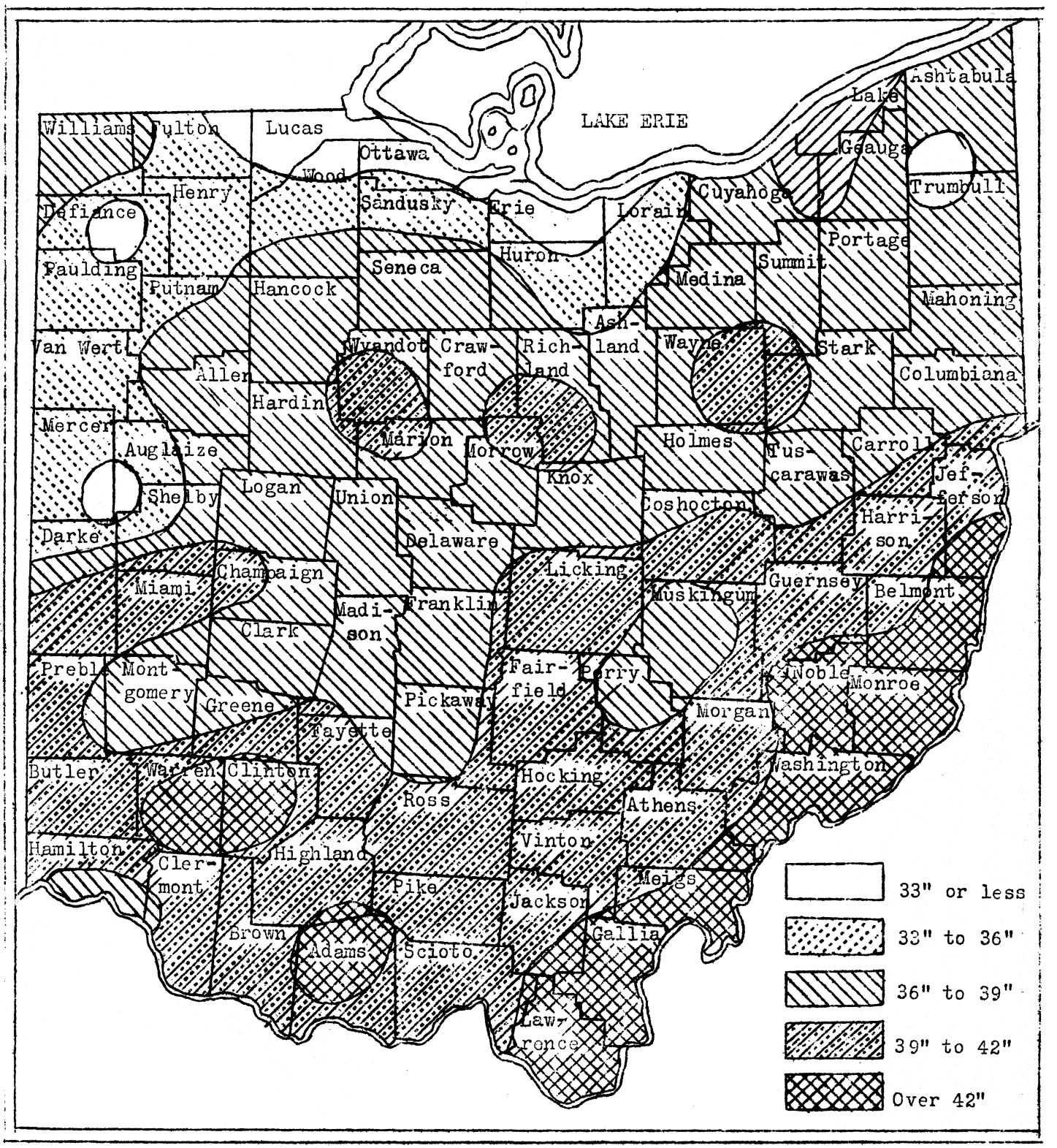


Chart II. Annual Normal Precipitation (in inches)
(Reproduced from Climatological Data: Ohio Section)

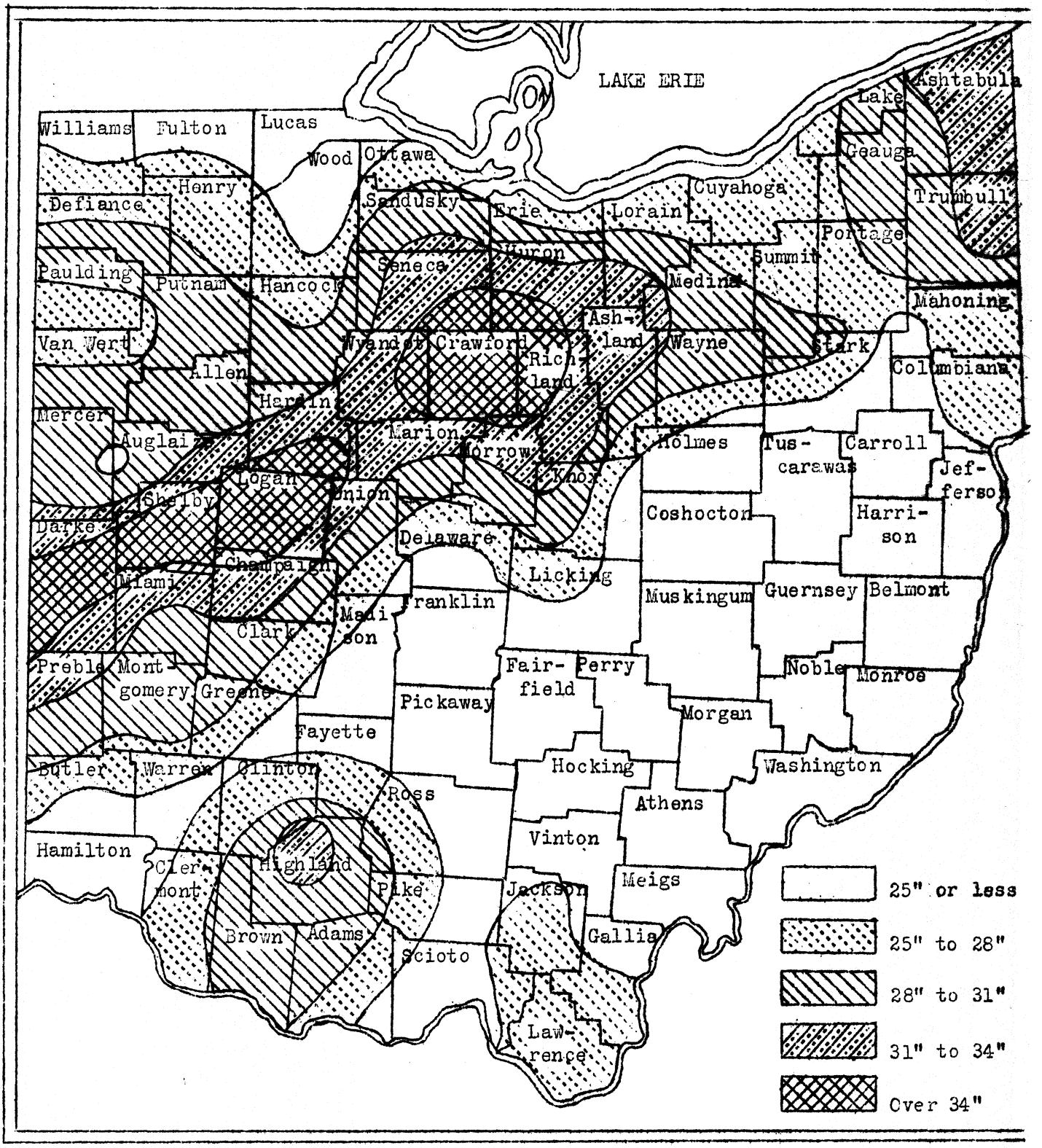


Chart III. Precipitation for 1930 (in inches)
(Reproduced from Climatological Data: Ohio Section)

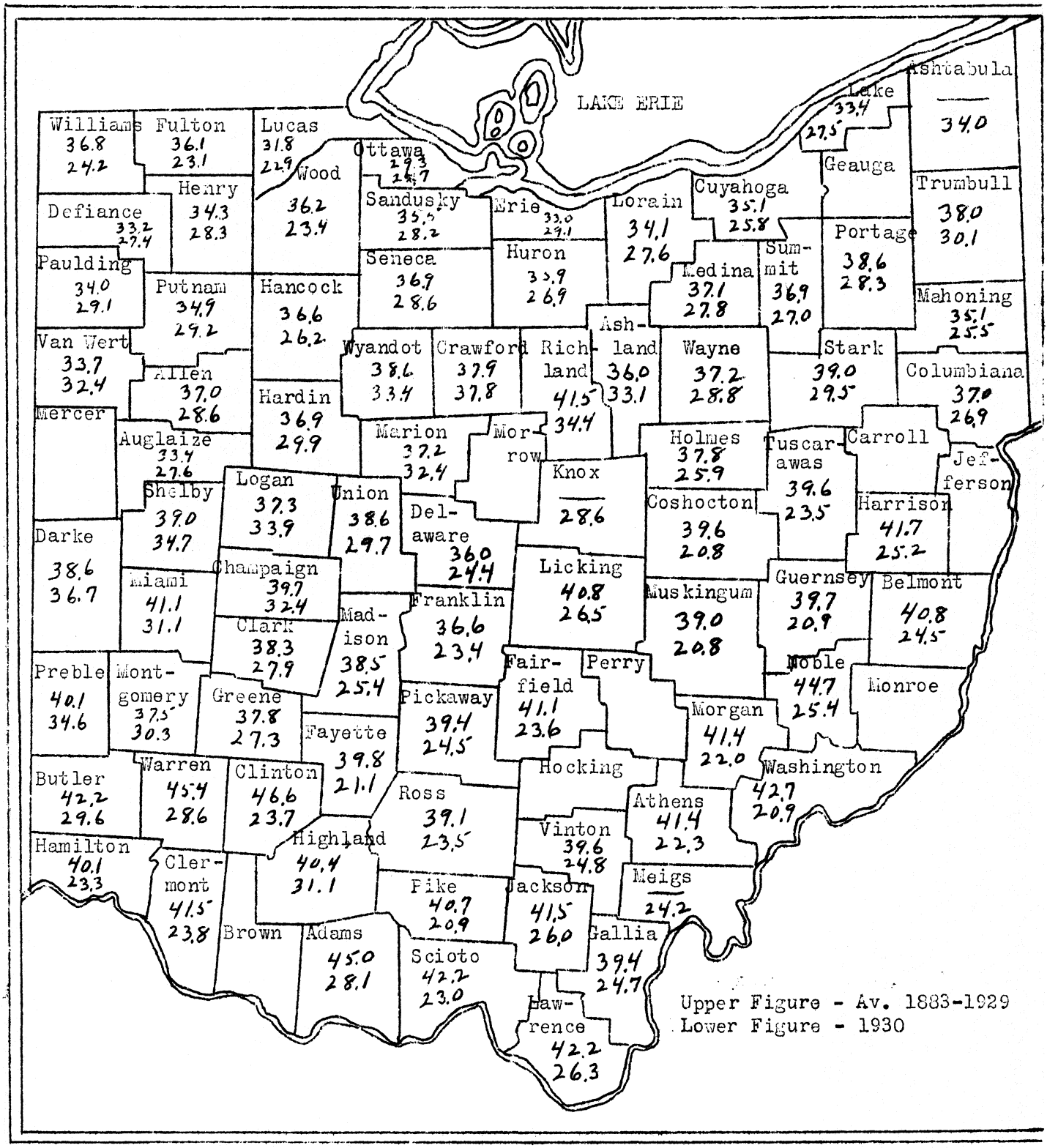


Chart IV. Annual Precipitation in Ohio by Counties. (in inches)

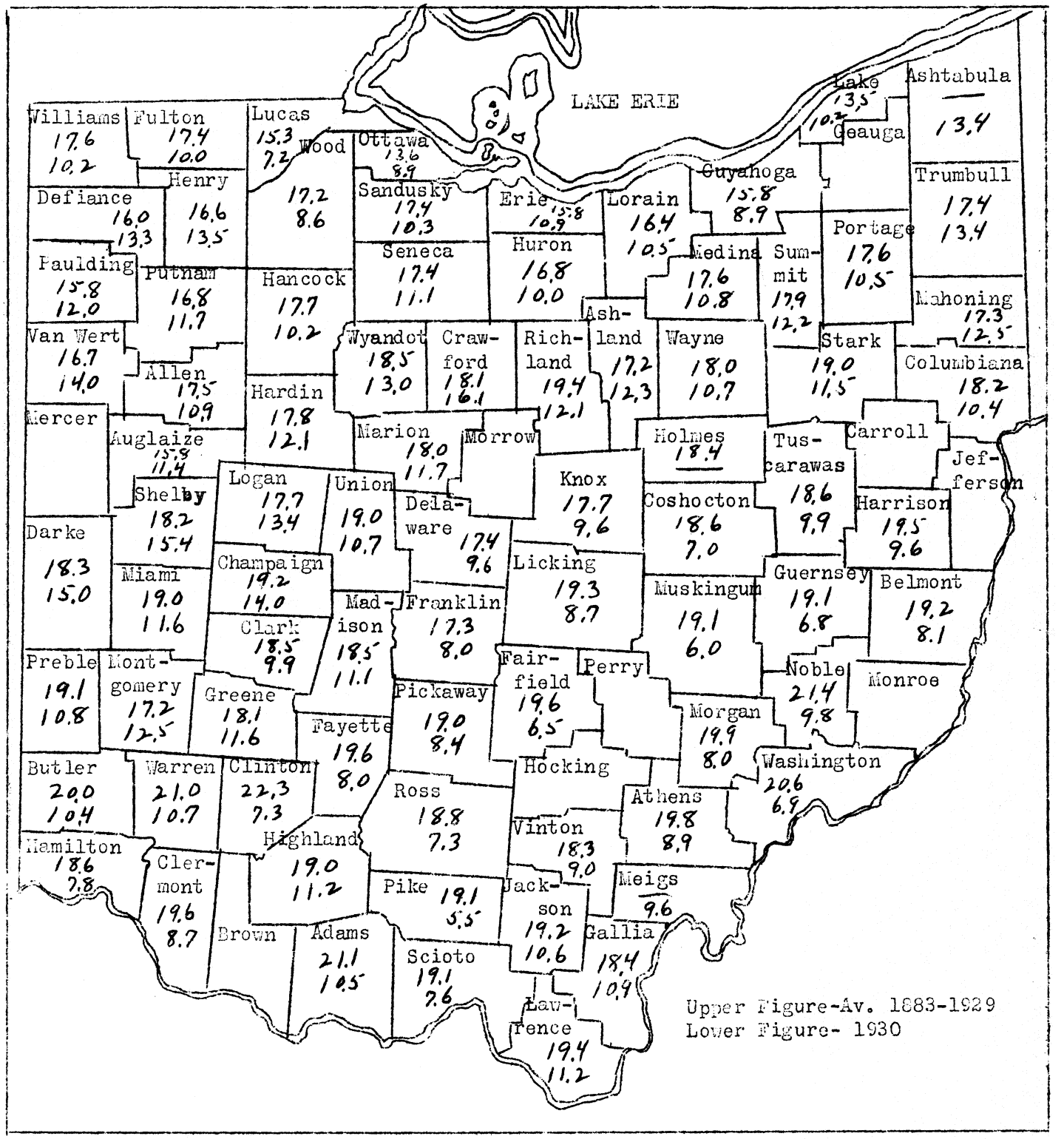
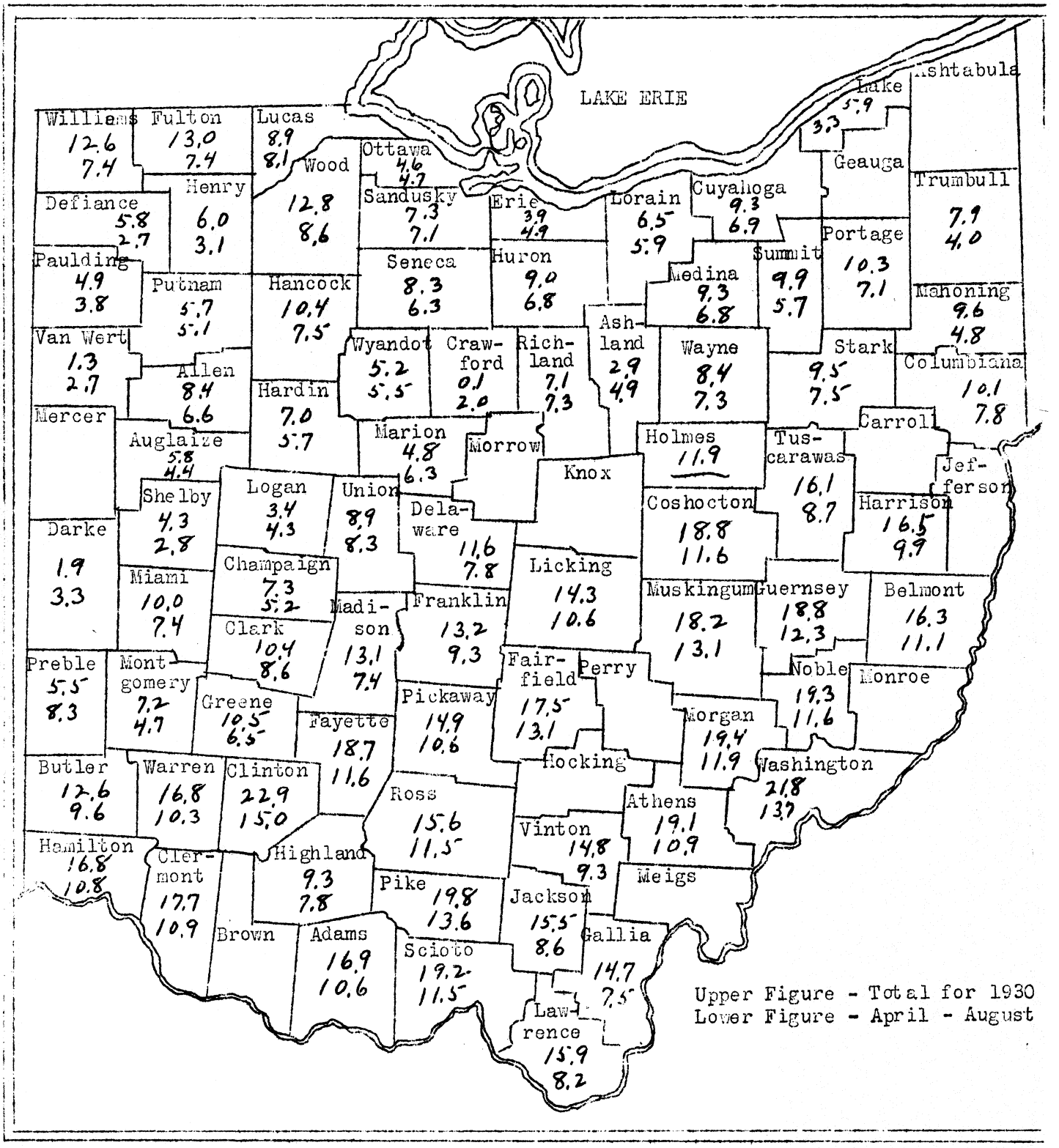


Chart V. Precipitation During the Growing Season, April - August. (in inches)



Upper Figure - Total for 1930
Lower Figure - April - August

Chart VI. Precipitation Deficiency for 1930. (in inches)

Part II

The drought seriously reduced crop yields. Effects of the drought may be indicated by the yeild per acre of the most important harvested crops, by the condition of pastures, the amount of food produced by gardens and orchards, the amount of livestock farmers were able to feed on their farms during the year, and by the necessity of hauling water.

Corn and hay were the field crops which suffered to the greatest extent. The yields of other field crops as a whole were up to normal. The accompanying table gives the estimated yields of the major crops in Ohio compared with the ten year average. A composite figure for all crop yields for the state shows the yield to have been 79.3 per cent of the 10 year average.

Table 3. Crop Yields Per Acre in Ohio

Crop	Unit	1930	10 Year Average
Corn	Bushel	25.5	38.8
Hay	Tons	0.88	1.4
Potatoes	Bushel	90.0	93.0
Buckwheat	Bushel	16.0	19.6
Wheat	Bushel	17.8	16.1
Oats	Bushel	36.0	35.1
Barley	Bushel	27.5	27.3
Rye	Bushel	15.0	14.9

December 1930 "Crops and Markets, U. S. D. A."

There was much variation in the average yield of corn and hay throughout the state. In the case of hay there was a wide variation in yield, in the dif-

ferent parts of the state, ranging from a 29 per cent normal crop in Washington County to an 80 per cent normal crop in Geauga and Ashtabula Counties. There were 31 counties in southeastern Ohio with an average yield of 50 per cent or less of normal, 33 counties most of which were located in northwestern Ohio with an average yield between 50 and 67 per cent of normal, and 13 counties in northeastern, 9 in west central Ohio and Ottawa and Lucas Counties with an average yield of more than 67 per cent of a normal crop.

With corn the variation in yield ranged from 43 per cent of a normal crop in Pike and Scioto Counties to 106 per cent in Shelby County. There were 6 counties along the Ohio river with an average yield of 50 per cent or less of normal, 47 counties in central Ohio between 50 and 67 per cent, 6 scattered throughout central Ohio between 67 and 75 per cent, and 29 along the western and northern borders with average yields above 75 per cent of a normal crop. Charts VII and VIII show, by counties, the yield of corn and hay and also the per cent which these yields were of normal. Chart IX shows corn and hay yields in composite as a per cent of normal.

There is no good basis available as a means of measuring the effect of the drought on pasture yields, other than the condition figures during the growing season. It would seem reasonable to assume, however, that the reduction in pasture yield was at least as great as that for hay. The greatest shortage of rainfall occurred in that section of the state where the relative acreage of land in pasture is the highest.

The effect of the drought upon the farm family garden was serious and perhaps more important than is often thought. As with pasture the most severe drought occurred in that section of the state where the greatest dependence is placed upon the farm garden. Some gardens were almost a complete failure and many others did not provide more than one-half the usual amount

of produce for summer food and for winter canning and storage.

For the state as a whole it will be noted that the regions of short rainfall were the regions of short crops.

The drought did not have the effect in reducing the numbers of livestock as was thought would be the case earlier in the year. There were rumors that livestock was being sold for practically nothing and even some rumors that livestock was being given away to prevent starvation. According to the United States Department of Agriculture the numbers of livestock on farms in Ohio January 1, 1931, as compared with one year earlier were as follows: Horses 97 per cent, all cattle 98, sheep 96, and swine 95 per cent. Whether or not the percentage change would have been different had we not had the drought can not be determined. However, the numbers of horses have been declining for several years and in all probability would have continued. All cattle have increased in numbers since 1928 and in 1930 declined 2 per cent. Swine have been on the down swing in the cycle for 2 years and continued with another 5 per cent decline. Sheep have shown very little change in the past 6 years except minor fluctuations. Declining prices generally lead to a decrease in the numbers of livestock.

Much inconvenience resulted from the necessity on the part of many farmers to haul water both for household purposes and livestock. A study made as of September 1 showed that 16 per cent of the farmers in the drought area were then hauling water, while outside of the drought area only four per cent of the farmers were hauling water.

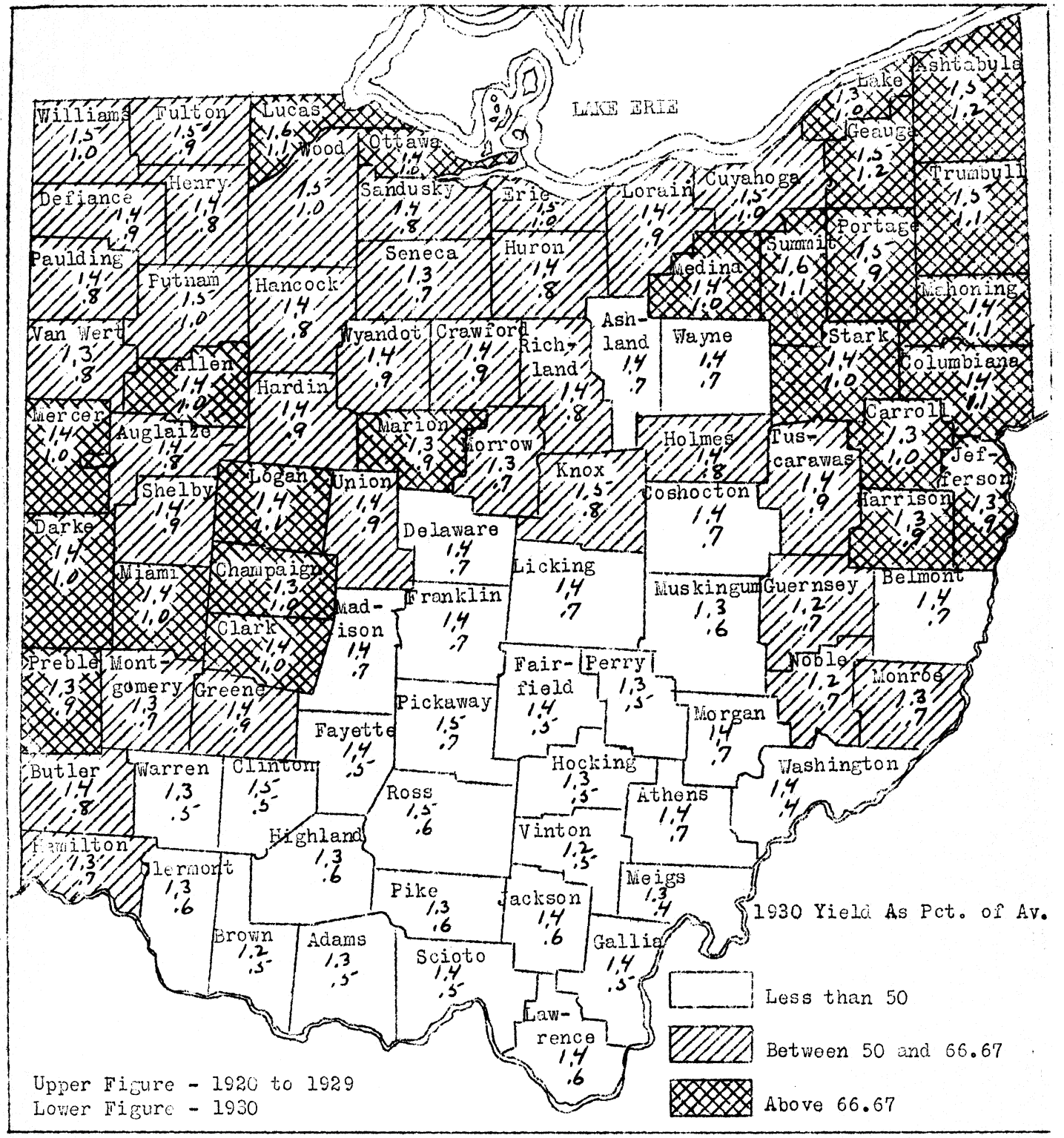


Chart VII. Hay: Yield Per Acre 1930 and Average 1920-1929
(1930 figures are preliminary estimates of the State-Federal Crop Reporting Service)

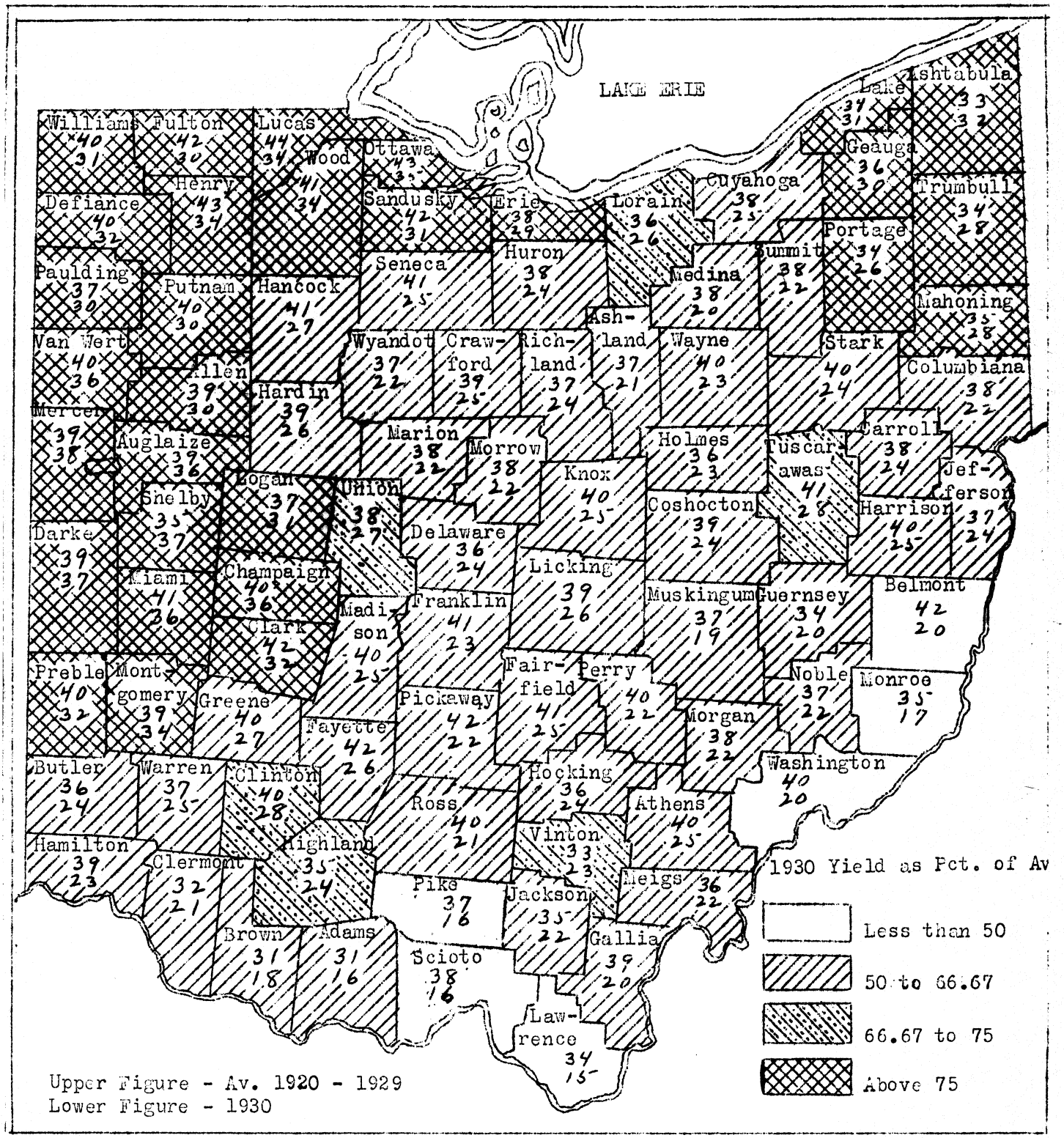


Chart VIII. Corn: Yields per Acre, 1930 and Average 1920-1929
(1930 figures are preliminary estimates of the State-Federal Crop Reporting Service)

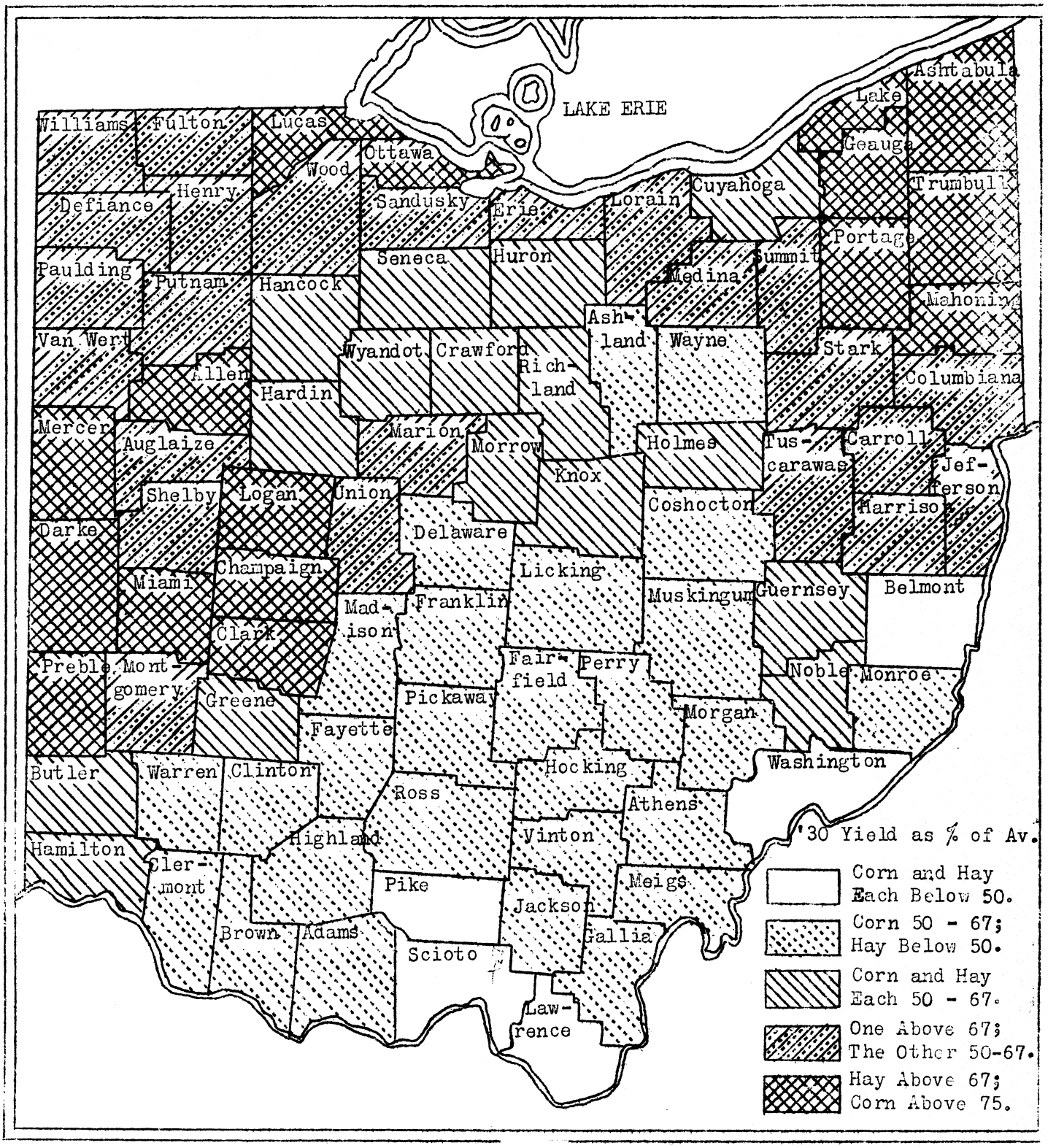


Chart IX. Corn and Hay: Yield per Acre in 1930 as compared with the Average 1920-1929

Part III

The effect of the drought upon the financial returns to Ohio Agriculture are difficult to measure. In the first place, a reduction in corn and hay yields will have an effect upon income for the ensuing year, since these crops are largely fed on the farm and will be reflected in reduced livestock returns or in higher expenses for feed until the next harvest period. In the second place the drought was accompanied by a decline in prices of nearly all farm products except hay, this made the effects of the crop shortage of increased severity. The reduction in maintenance secured from the garden has been previously noted.

The total cash income from the sales of farm products from the farm in 1929 was estimated at $340,236,000 that of 1930 at $278,500,000, a decrease of $61,736,000 or 18 per cent. Seventy-eight per cent of this decrease in income for the calendar year may be attributed to the decline in price and 22 per cent to the sales of a smaller quantity of products. This decline in quantity may be largely attributed to the drought. The effects of the drought on income had not, however, become fully effective by the end of 1930.

Perhaps a better measure of the financial results may be found in a comparison of the total value of crop production for the years 1929 and 1930. This indicates a 29.7 per cent reduction in crop value in 1930 as compared with 1929.

Value of total crop production	1929	$256,690,000
Value of total crop production	1930	$180,434,000
Reduction in value (1930)		$ 76,156,000

By applying 1929 prices to the 1930 volume of production the following is derived:

Reduction in cash value of 1930 crops (due to quantity)	$57,869,000
Reduction in cash value of 1930 crops (due to price)	$18,287,000
	$76,156,000

Thus 1930 crops as compared with those of 1929 showed a decline in value of 22.6 per cent due to volume and of 7.1 per cent due to price decline or a total decline in value of 29.7 per cent. Since crop acreages were practically the same in 1930 as in 1929 the decline in volume may be attributed to decreased yields. Reference to crop yield figures by counties would indicate that in the drought area the decrease in crop value was much greater than the state average.

The above figures do not fully show the effect of the drought upon income since no allowance has been made for the decreased returns from livestock.

Part IV

Farmers of the drought stricken area received aid through a reduction of freight rates on feed, and miscellaneous items moved into the drought area for farm use, also on livestock shipped out of the area for feeding purposes. The special rates granted were two-thirds of the usual rate for commodities moving into the area from west of the Mississippi River, and one-half on commodities moving into the area which originated east of the Mississippi River. This rate was effective over the period August 14 to November 30, 1930 inclusive. The actual savings in dollars and cents cannot be readily determined because of the differences in distance of shipment. The following table shows the various kinds and amounts of feed and livestock shipped into the drought area at reduced rates as indicated by the final report of the Ohio Drought Relief Railroad Committee.

Table 4. Carloads of Commodities Shipped at the Reduced Freight Rate

Commodity	Cars Handled	Per cent of Total
Hay	2,673	32
Corn	641	8
Oats	417	5
Wheat	152	2
Mixed Feed	2,659	31
Livestock	89	1
Miscellaneous	1,789	21
Total	8,420	100

Data from the Ohio Drought Relief Railroad Committee does not show the distribution of commodity movements by counties. The information given in Chart X, showing the movement by counties was compiled by the Department of Agricultural Extension, Ohio State University. The shaded portion of Chart X represents the official drought area.

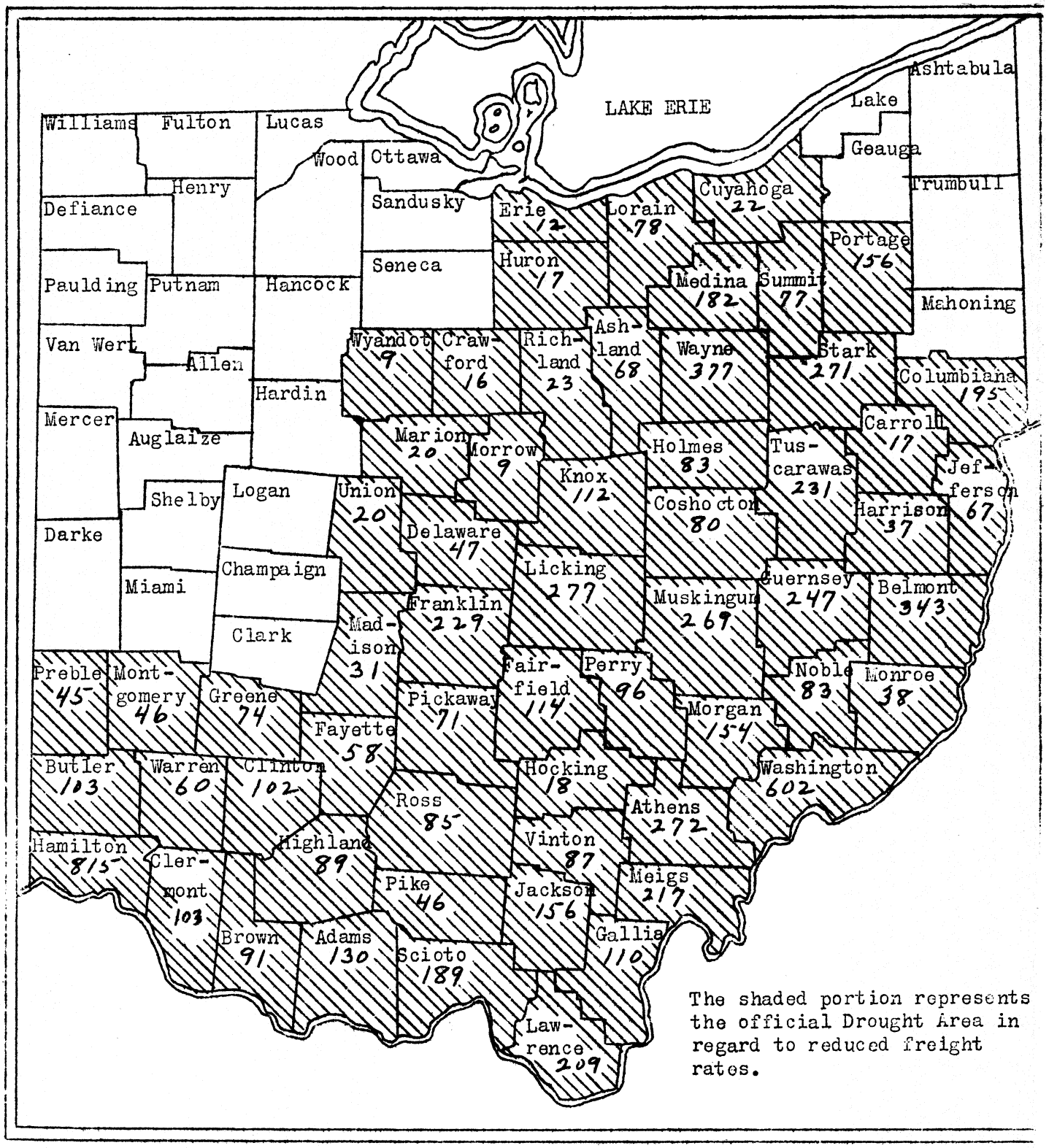


Chart X. Carload of Feed and Supplies Shipped into the Ohio Drought Area and Livestock Shipped Out for Feeding Purposes at Reduced Freight Rates.

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#11. Some of the Factors Considered by Wool Producers in Marketing Their Wool.

12. Credit in the Purchase of Farm Supplies.

#13. Marketing Lawrence County, Ohio, Apples.

14. The Influence of the Corn Borer in Representative Areas of Northwestern Ohio.

#15. Farm Real Estate Values in Ohio.

#16. Produce Receipts by Truck on the Columbus Wholesale Market, July 2-Dec.31, 1928.

17. Large Land Holdings and Their Operation in Twelve Ohio Counties.

18. The Combined Harvester-Thresher in Ohio in 1928.

#19. Semi-Annual Index of Farm Real Estate Values in Ohio, Jan. 1 to June 30, 1929.

#20. Truck Farming in the Marietta Section, Washington County, Ohio, 1920-1924.

#21. Present Status of Farmer-Owned Elevators in Ohio, with Some Comparison with Conditions in 1924.

22. The Estimated Gross Cash Income from the Sale of Agricultural Products from Ohio Farms, by Counties, 1927.

23. Semi-Annual Index of Farm Real Estate Values in Ohio, July 1 to Dec. 31, 1929.

24. The Mechanical Corn Picker in Ohio.

#25. Farm Produce Received in Trucks on the Columbus Wholesale Market, 1929.

26. Ohio Farm Land Acquired by Life Insurance Companies Thru Foreclosure, in 1929.

27. The Estimated Gross Cash Income from the Sale of Agricultural Products from Ohio Farms, by Counties, 1929.

28. Financial Operations of Ohio Farmer-Owned Elevators During the Fiscal Year 1929-1930.

29. Farm Family Participation in Lodges, Grange, Farm Bureau, Four-H Clubs, School and Church.

30. Farm Equipment for Communication and Household Convenience.

31. Semi-Annual Index of Farm Real Estate Values in Ohio, Jan. 1 to June 30, 1930.

32. An Average Day's Work on Ohio Farms.

33. Semi-Annual Index of Farm Real Estate Values in Ohio, July 1 to Dec. 31, 1930.

34. The Adequacy of Farm Standards of Living.

35. A Survey of Some Factors that Influence Price of Eggs in the Cleveland Territor

36. Some Relationships of the Variable, Cash Expenditure for Farm Family Living.

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